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appeared a glittering dancing figure, radium, whose outer robe brilliant with sun-like rays was suddenly cast aside, and gray-gowned helium stood revealed.

A tri-colored banner, brown, green and yellow announced the departments of geology, botany and zoology, their motto being "Dauer im Wechsel," and their subject "Evolution in Nature." The "Sacred Goddess, Mother Earth," Flora from Botticelli's "Primavera," attended by algæ, fungi, ferns, pines and Cattleya orchids, symbolized this thought. Mendel, in monk's garb, followed, accompanied by a group of fruit flies (*drosophila*) with the characteristic red and white eyes, appearing in the ratio of 3:1 in the second generation.

The entire procession showed marvellous unity of thought as well as artistic blending of color and was pronounced by those who witnessed it to have a tangible educational value as well as the quality of dreamy beauty characteristic of the great pageants of the world.

SCIENTIFIC NOTES AND NEWS

DR. ANDREW D. WHITE, the first president of Cornell University, distinguished for his work in education and diplomacy, and for his publications on history and science, celebrated his eightieth birthday on November 7.

COL. E. E. MARKWICK, C.B., has been elected president of the British Astronomical Association.

AN international conference on time reckoning was opened at the Paris Observatory on October 15 by M. Guist'hau, minister of education; and M. Bigourdan, member of the Institute and of the Bureau des Longitudes, was elected president. The conference has been summoned mainly with the object of dealing with various practical uses of wireless telegraphy in the synchronization of time signals throughout the world.

THE Council of the Institution of Civil Engineers has made the following further awards for papers read during the session 1911-12: A Watt gold medal to Professor W. H. Burr (New York), and the Crampton prize to Professor R. J. Durley (Montreal). The

following Telford premiums have also been awarded for papers published in the proceedings without discussion during the same session: To Messrs. Paul Seurot (New York), David Anderson, and Harry Cunningham (London), Dr. S. P. Smith (Birmingham), Mr. E. G. Rivers (Richmond), Mr. E. H. Morris (Manchester) and Professor A. H. Gibson (Dundee). The Howard quinquennial prize for 1912 has been awarded to Mr. J. H. Darby (Sheffield), in recognition of improvements introduced by him in iron and steel production, and the Indian premium for 1912 to Mr. H. G. Mitchell (Madras).

DR. CHESTER A. REEDS, for four years instructor in geology at Bryn Mawr College, has been appointed assistant curator in the department of geology and invertebrate paleontology of the American Museum of Natural History.

THE government of Siam is planning to construct a public system of irrigation and drainage, and has appointed Mr. William Bradley Freeman, C.E. (Cornell, '05), of Denver, director of the project.

THE *British Medical Journal* states that considerable progress has recently been made in the organization of the Australian Institute of Tropical Medicine at Townsville, Queensland. Dr. W. Nicoll, of the Lister Institute, and until recently Ernest Hart scholar of the British Medical Association, has been appointed chief assistant; Dr. Priestley, Beit Memorial scholar, an Australian graduate who for the last year has been working at the Lister Institute, has been appointed second assistant; and Dr. Young, assistant chemist at the Lister Institute, biochemist.

THE University of Pennsylvania museum's yacht, *Pennsylvania*, is ready for its three-year expedition into the Amazon region. Owing to delay caused by negotiations with the Brazilian government, however, the actual start of the expedition will not be made until late in January. Mr. Algot Lange, head of the expedition, will sail for Rio de Janeiro on December 28.

THE Congo expedition of the American Museum of Natural History under the leadership of Messrs. Lang and Chapin reported from Faradje under date of August 21 that the packing of equipment and collections was well under way for the start with caravan for Avakubi and thence out of Africa by the western coast.

MR. WILFRED H. OSGOOD, of the Field Museum of Natural History, has returned from a nine-months' trip, during which he crossed the Andes of northern Peru and descended the Amazon River, studying and collecting the vertebrates of the region. Mr. Malcolm P. Anderson, who accompanied him, has remained to continue work in Peru and Brazil.

MR. J. B. TYRRELL, of Toronto, Canada, has just returned from an extended expedition into the Hudson Bay region. He went northward in the early summer by the ordinary trade route to the mouth of the Nelson River, spent the remainder of the summer on Hudson Bay, and returned from the Bay up the Severn River and by a previously unexplored route across the new district of Patricia to the line of the Grand Trunk Pacific Railway.

DR. EDWARD L. THORNDIKE, professor of educational psychology in Teachers College, Columbia University, will give a course of lectures on the Ichabod Spencer Lecture Foundation at Union College in February and March.

THE third of the present series of Harvey lectures will be delivered by Professor Joseph Erlanger, of the Washington University Medical Department, St. Louis, at the New York Academy of Medicine on the evening of November 9, at 8:30. Professor Erlanger's subject will be: "The Localization of Impulse Initiation and Conduction in the Heart."

PROFESSOR BURT G. WILDER lectured recently at Smith College on "Louis Agassiz and the Founding of the Laboratory at Penikese."

IT is stated in *Nature* that lectures on volcanic action, earth movements, the geological action of water and the evolution of scenery

and life on the globe are to be delivered by Dr. Werner Marchand on October 17, 24 and 31, in the meeting rooms of the British Esperanto Association, London. They will be delivered in Esperanto.

PROFESSOR METCHNIKOFF will deliver the Lady Priestley memorial lecture for 1912 on "The Warfare against Tubercle," on November 29, in the lecture theater of the Royal Society of Medicine, London. The lecture will be given in French and illustrated by lantern pictures.

THE Chicago Academy of Sciences has announced the following course of public lectures for the fall of 1912:

October 18—"Places of Special Scientific Interest near Chicago," by Dr. Wallace W. Atwood, secretary of the academy.

October 25—"Switzerland and the Alps," by Mr. Edward Marsh McConnoughey.

November 1—"Floral Exhibits in the Academy and how to use them," by Dr. Herman S. Pepoon, of the Lake View High School.

November 8—"The Common Butterflies about Chicago," by Mr. Frank Collins Baker, curator of the Chicago Academy of Sciences.

WE learn from *Nature* that a memorial service for the late Mr. H. O. Jones, F.R.S., fellow of Clare College, Cambridge, demonstrator to the Jacksonian professor of natural experimental philosophy, and Muriel Gwendolen Jones, his wife, who were killed in the Alps in August while on their honeymoon, was held at the University Church of St. Mary the Great, Cambridge, on October 12. The service was attended by a large congregation, which included masters of several colleges, university professors and many other members of the university. The Royal Society, the Alpine Club and the Cambridge Alpine Club were also represented.

DR. ALBERT N. HUSTED, who has been connected with the New York State Normal College as student and teacher for fifty-nine years, died on October 16. He would have been seventy-nine years of age had he lived until October 19. His entire life as a teacher was spent in this institution, where he was professor of mathematics, continuing in

his work until within less than a week of his death. He was vigorous physically, possessed a charming personality and was greatly beloved by both students and faculty.

MR. F. H. LOW, the honorary secretary of the Röntgen Society, London, has died at the age of fifty-eight years.

DR. OTTO KRÜMMEL, professor of geography at Marburg, distinguished for his work on oceanography, died on October 12, at the age of fifty-eight.

DR. PAUL SECOND, a distinguished Paris surgeon and professor at the University of Paris, died on October 27.

DR. BENJAMIN AUGUST FREIHERR AFSCHULTEN, formerly docent for chemistry at Helsingfors, died at Paris, on September 29, aged fifty-six years.

HERMANN MUNK, formerly professor of physiology at the veterinary college in Berlin, died in Berlin on October 1. The Berlin correspondent of the *Journal* of the American Association writes of him: "Munk was born in Posen, February 3, 1839, and studied at Göttingen and Berlin as a pupil of Johannes Müller, Hanle, Weber, Du Bois-Reymond, Virchow and Traube. In 1862 he became Privatdozent, and in 1869 professor extraordinary in Berlin. In 1876 he was called as professor ordinary of physiology to the veterinary school, and in 1880 he was appointed a regular member of the Prussian Academy of Sciences, and in 1897 regular honorary professor. After the death of Du Bois-Reymond, Munk was proposed by the Berlin faculty, in the first place, as his successor. The government refused in spite of Munk's prominence, and solely on account of his Jewish denomination, to enter into any transaction with him, a fact which, like many other similar occurrences, does not add to the fame of the Prussian government. In 1907 Munk resigned his office for reasons of health. The number of literary works produced by him is very extensive. When he was a student he delivered at Göttingen an excellent report of research on the finer structure of primitive muscular

fibers. In Berlin he wrote a prize work on egg and sperm formation and fertilization of the nematodes. As assistant of Du Bois-Reymond, his studies covered chiefly the general physiology of the nerves and muscles, especially the electric phenomena. His collected pioneer works on the cerebral cortex were published in the eighties under the title 'Ueber die Funktionen der Grosshirnrinde.' His later works treat of the cardiac and laryngeal nerves, cataphonia, milk secretion and the thyroid gland. Munk was an excellent speaker and a beloved teacher, high-minded and modest."

THE U. S. Civil Service Commission announce an open competitive examination for alloy chemist, for men only, to fill a vacancy in this position at a salary ranging from \$2,400 to \$3,000 per annum in the Bureau of Mines, Department of the Interior.

DR. RUPERT BLUE, surgeon-general of the U. S. Public Health Service, is making plans to establish a museum or permanent exhibit on sanitation and hygiene. It is one of the duties of the Public Health Service to disseminate knowledge of sanitation and hygiene, and he believes that this can be greatly promoted by such a permanent exhibit.

THE *Observatory* states that it is proposed to establish an astronomical observatory on Grouse Mountain, British Columbia. Mr. T. S. H. Shearman, director of the Vancouver Meteorological Station, appears to be the originator of the scheme, which has the support of the British Columbia Academy of Science and astronomical and meteorological officials in Canada.

THE meeting of the American Society of Naturalists at Cleveland was announced for January 1 and 2, 1913. It is expected, however, that all meetings will be held on the second.

THE thirtieth annual congress of the American Ornithologists' Union will convene in Cambridge, Mass., on November 11, at 8 P.M. The evening session will be devoted to the election of officers and the transaction of other

routine business. The meetings open to the public and devoted to the reading and discussion of scientific papers will be held at the University Museum, Oxford Street, November 12-14, from 10 o'clock A.M. until 4 P.M. each day.

THE twelfth meeting of the Central Association of Science and Mathematics Teachers will be held at the Northwestern University, Evanston, on Friday and Saturday, November 29 and 30. The Great Northern Hotel, Chicago, has been selected as headquarters for out-of-Chicago members and friends. The addresses at the general sessions will be given by Professor W. C. Bagley, of the University of Illinois, and Carroll G. Pearce, superintendent of public schools, Milwaukee, Wisconsin. The programs of the five sections contain the names of many of the prominent educators of the middle west and provide for many reports and discussions of a practical nature which will prove of great interest and value to teachers of science and mathematics.

THE successful transmission of infantile paralysis in monkeys through the bite of the blood-sucking stable fly (*Stomoxys calcitrans*) has been announced by Professor M. J. Rosenau, of the Harvard Medical School, and C. T. Brues, of the Bussey Institution, Harvard University, and their results have been confirmed by Dr. J. F. Anderson, of the Public Health Service. The hypothesis advanced last year by Brues and Sheppard that the stable fly is the carrier of this disease has thus been given experimental proof, although it is still possible that other channels of infection may exist. With the exception of the investigations of Dr. Anderson, the work was done under the auspices of the Massachusetts State Board of Health.

Nature learns from Greenwich that all attempts to make observations of the recent total eclipse of the sun were frustrated by the heavy rain which prevailed in the eclipse region of Brazil on eclipse day, October 10. The Greenwich observers, Messrs. Eddington and Davidson, were located at Alfenas, an elevated village some 185 miles north of

Santos, where there were also eclipse parties from France, Germany, Brazil and other countries. The Brazilian officials rendered all the assistance they could, and the government voted a sum of £5,000 for the reception of the visiting astronomers at Rio.

THE American Association for Study and Prevention of Infant Mortality at its recent Cleveland meeting adopted the following resolutions:

Resolved, That the Association for Study and Prevention of Infant Mortality recommend, in addition to birth and mortality statistics, the collection and compilation of marriage, divorce, industrial and all such social statistics as may have a relation to the problem of infant mortality.

WHEREAS, It has been shown that valuable results have been obtained from the requirement for proper inspection of dairy farms and dairy depots, before granting a permit for the production and distribution of milk, and that the score-card has been of great assistance in recording the observations made at such inspections, therefore be it

Resolved, That the efforts that are being made to secure uniform standards for inspection and uniform methods for recording the results of inspection be approved.

WHEREAS, Constructive housing legislation is made difficult by the absence of comprehensive information relating to infant morbidity and mortality to bad housing, therefore be it

Resolved, That the association emphasize the necessity of such investigation as will, if possible, reduce to a scientific basis the cost of bad housing in terms of infant morbidity and mortality.

THE second season of the Field School of Geology of the University of Chicago was spent in the San Juan Mountains of southwestern Colorado. A party of ten men went into camp near Ouray. After examining several of the mines and milling plants in that vicinity and becoming familiar with the geologic formations and structures around Ouray the party undertook a systematic geological survey of the northeast quarter of the Montrose Quadrangle. The work was extended northeastward into the Uncompahgre Quadrangle and included the study and mapping of a portion of the Black Canon of the Gunnison. The party prepared an areal geological

map of about two hundred and fifty square miles. This work was done under the direction of Dr. W. W. Atwood and in conformity as far as possible with the official methods of the United States Geological Survey.

MR. F. H. STERNS, of the class of 1909 Oberlin College, has been employed by the Peabody Museum of Harvard University to explore an interesting class of prehistoric village sites in eastern Nebraska. A large portion of the archeological specimens collected by the exploration have been presented to the Geological Museum at Oberlin. Mr. Sterns worked in Sarpy County, Nebraska, south of Omaha. The sites evidently belong to a very early stage of Indian occupation and until Mr. Sterns's researches were either unobserved or misinterpreted. They occupied circular depressions popularly supposed to be "buffalo wallows," and thought by Professor Barbour to be the original shape of the sites. It turned out, however, that the structures were square, and that the depressions had assumed their present shape from the deposition of silt, brought in by winds and storms. The collection, which is now being unpacked in the Oberlin Geological Museum, consists of flint and jasper scrapers, knives, arrow heads and the cores from which they had been broken, besides various forms of grooved and polished axes, together with a great variety of ornaments. Some of the arrow shaft smoothers are made from pumice stone which Mr. Sterns concludes has floated down the Missouri River from Montana. The collection constitutes one of the most valuable additions in recent years to Oberlin's already large and valuable archeological material.

IN the entire population of the United States illiteracy has declined from 10.7 in 1900 to 7.7 per cent. in 1910, but among children 10 to 14 years of age the decline in the 10 years was from 7.2 to 4.1 per cent. These facts appear in a statement in regard to the illiteracy of children issued by Director Durand, of the Bureau of the Census, Department of Commerce and Labor. The figures are based upon tabulations prepared by

W. C. Hunt, chief statistician for population. The general decline of illiteracy marks the improvement of educational opportunities throughout the country, and this improvement is most distinctly measured in comparing the children who have just passed through the schools. Generally speaking, each successive generation in the United States shows a smaller proportion of persons unable to read and write, and this proportion is always least for the children 10 to 14 years of age. Illiteracy is therefore considerably less for children than for the aggregate population. In 1910 the whole number of children of the ages 10 to 14 years who were unable to read and write was 370,120, of whom 144,659 were white and 218,355 negroes, leaving 7,106 among Indians, Chinese and Japanese. Illiteracy among the native white children has fallen to 1.7 per cent., and among those of foreign or mixed parentage who for the most part live in cities, the proportion is as low as 0.6 per cent. On the other hand, as many as 18.9 per cent. of negro children are illiterate. In all classes of the population a marked improvement is noted in comparison with the census of 1900. Illiteracy among white children has fallen from 3.5 to 1.8 per cent., and among the negroes from 30.1 to 18.9 per cent. These figures show that illiteracy in the United States is being gradually eliminated, and that when the present generation of children grows up to manhood and womanhood illiteracy in the United States, especially among the white population, will be no greater than in the most advanced countries of Europe. This striking diminution in illiteracy among children in the last 10 years is found in all parts of the United States, and in the northern part of the country such illiteracy has almost entirely disappeared, as in this section of the country the proportion is considerably less than one per cent. of the whole number of children.

THE Registrar-General in his annual summary for 1911, as summarized in the *London Times*, states that in England and Wales the marriages registered last year numbered 274,577, corresponding to a rate of 15.2 persons

married per 1,000 of the population at all ages; the number of births was 881,241, being in the proportion of 24.4 per 1,000 of the population, and the deaths numbered 527,864, or 14.6 per 1,000 of the population. The marriage rate was 0.2 per 1,000 above that in the previous year, but 0.3 below the average rate for the ten years 1901-10. The highest rate in any registration county with a population exceeding 100,000 was 17.8 in London, and the lowest rate was 11.5 in Herefordshire. A decline of 0.7 per 1,000 is recorded in the birth-rate when compared with that for 1910, which was the lowest recorded till then; and last year's rate was 2.8 per 1,000 below the average for the preceding ten years. Among the registration counties Durham had the highest birth-rate, 31.1, and Sussex, with 18.2, was at the other end of the scale. The death-rate was 1.1 per 1,000 above that in 1910, the lowest yet recorded, but was 0.8 below the average for the preceding ten years. The highest rate was 16.8 in Lancashire and the lowest was 11.4 in Middlesex. Of the deaths registered 114,798 were those of infants under one year, 263,481 those of persons between one year and 65 years of age, and 149,585 those of persons aged 65 years and upwards. Infantile mortality, measured by the proportion of deaths under one year of age to registered births, was 130 per 1,000, or 25 per 1,000 above the rate in 1910, and three above the ten years' average. In London the marriages during 1911 numbered 40,201, corresponding to a rate of 17.8 per 1,000 of the estimated population, an increase of 0.5 upon the rate in 1910 and of 0.4 upon the average rate for the five years 1906-10. After distributing the births in the chief institutions receiving maternity cases, the birth-rate in London was 24.8 per 1,000 of the population. This is the lowest rate recorded in the metropolis since civil registration was established. In 1867 the birth-rate in London attained the highest point on record, viz., 36.5 per 1,000 living; since that date the ratio has, with trifling exceptions, fallen steadily. Last year's rate of 24.8 was 0.7 below that in 1910, and no less than 2.7 below the average rate for the ten years 1901-10. The effect of the fall

in the birth-rate in London is that, notwithstanding the great decline in the death-rate which has occurred since 1876-80, the natural increase of population by excess of births over deaths, which was then 13.38 per 1,000 living, has now fallen to 9.74. The death-rate in London last year was 15.0 per 1,000, or 1.3 above that in the previous year, and 0.1 above the average for the five years 1906-10. Since the beginning of this century the rate of infantile mortality in London has, with fluctuations, shown a considerable decline. It reached its lowest point, 103 per 1,000 births in 1910, and rose to 129 last year.

UNIVERSITY AND EDUCATIONAL NEWS

WORK has begun on the new graduate school at the University of Pennsylvania, which is to cost \$500,000. Money for the school was willed by Colonel James M. Bennett in 1889. There will be dormitories for women as well as men.

FIFTY years after the founding of the School of Mines at Columbia University, or in September, 1914, the Schools of Engineering, its successor, will enter upon a new era and engineering will be placed on the same university plane as law and medicine. Beginning with the academic year of 1914-15 the engineering courses at the university will be composed of three years of undergraduate work, leading up to the degree of bachelor of science; and three years of postgraduate work, leading to the engineering degrees. In order to make adequate provision within the university for students who desire to prepare themselves in three years of college residence for the new courses, a program has been prepared leading to the degree of B.S. The first and practically all the second year will be offered in the present academic year of 1912-13, and the third year may be followed substantially, although modifications may be necessary to avoid conflict with the present courses for candidates for degrees under the old basis, and special programs will be arranged in case of conflict, so that students who desire to begin the new six years course may do so at